

## Computer Specifications

### Main Unit

**CPU**  
386SX microprocessor; 8 MHz or 16 MHz clock speed, selectable through SETUP or software command (**Ctrl-Alt-f**)

**Main memory**  
1MB (640KB *conventional*; the remaining 384KB can be used as either shadow RAM or extended memory, selectable through SETUP)

**Math coprocessor**  
Socket for optional 16-MHz, 387SX coprocessor

**Clock/calendar**  
Real-time clock and calendar with battery backup

### Interfaces

**Parallel / External diskette drive**  
25-pin, D-type, female connector; standard B-bit parallel or external diskette drive support, selectable through SETUP

**Serial**  
RS-232C, programmable, asynchronous, 9-pin, D-type male connector

**Video**  
15-pin, female connector; supports VGA monitor

**External numeric keypad**  
9-pin, mini-DIN connector for **optional** external numeric keypad

**Speaker**  
Internal

**Memory**  
Internal RAM card slot; allows expansion to 2MB or 5MB

**Modem**  
Internal slot for optional modem

# EPSON NB3s

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## Keyboard

82 sculptured keys; status indicator bar icons for Num Lock, Caps Lock, and Scroll lock

Optional, external numeric keypad

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## Mass Storage

### **Hard disk**

Interchangeable, slide-out, 20MB or 40MB hard disk designed for low power consumption; 23ms average access time; built-in controller; power-saving feature

### **Diskette drives**

One internal, 1.44MB 3 1/2-inch diskette drive

Optional, external 5 1/4-inch (1.2MB) diskette drive

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## Display

Large (640x480 dots), high contrast, paper-white, backlit LCD display with 16 gray levels; continuous brightness and contrast controls; power-saving feature

CRT mode enabled automatically by connecting an external display to the RGB port before power on

External, VGA-compatible display **supported**

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## Power Supply

Interchangeable, rechargeable, internal NiCad battery pack, lasts approximately 2 hours

10-volt AC adapter (can recharge battery pack while operating computer) with automatic 100-240V sensing. 50/60 Hz

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## Physical Dimensions

### **Height**

1.72 inches (43 mm)

### **Width**

8.5 inches (210 mm)

### **Depth**

11.8 inches (295 mm)

### **Weight**

5.7 lbs (2.6 kg) with battery and hard disk

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## Environmental Requirements

### **Temperature**

Operating: 41° to 95° F (5° to 35° C)

Non-operating: 41° to 122° F (-20° to 60° C)

### **Humidity**

Operating: 20% to 80% (non-condensing)

Non-operating: 8% to 90% (non-condensing)

### **Altitude**

Operating: -230 to 11,800 feet (-60 to 3,000 m)

Nonoperating: -230 to 47,200 feet (-60 to 12,000 m)

**Note** When traveling by airplane, be sure to take your computer into the passenger compartment as carry-on luggage to prevent it from being stored in an unpressurized storage compartment.

**options**

- Internal 2400-baud, Hayes-compatible, auto-dial modem
- 1MB or 4MB RAM expansion cards
- 20MB or 40MB, interchangeable hard disk drives
- External numeric keypad
- Battery pack
- External battery charger
- Car cigarette lighter adapter
- Carrying case

**Expansion Unit**

**Power Supply**

Automatic 100-240V sensing, 50/60 Hz. Supplies enough power to operate the computer, recharge the battery pack and power an optional full-size keyboard

**Hard disk**

Interchangeable, slide-out, 120MB hard disk; 19ms average access time; built-in controller

**Option slots**

Two standard input/output expansion slots, **8/16-bit** ISA-compatible. Switch to disable internal VGA controller

Option slot	Dimension	Maximum size
Front	Width	0.66 inches (17 mm)
	Height	4.80 inches (122 mm)
	Length (normal)	10.63 inches (270 mm)
	(with expansion cover) (hard disk installed)	13.30 inches (340 mm) 6.12 inches (155 mm)
Rear	Width	0.66 inches (17 mm)
	Height	4.13 inches (106 mm)
	Length (normal)	10.63 inches (270 mm)
	(with expansion cover)	13.30 inches (340 mm)

**Options**

- 120MB interchangeable hard disk drives
- External keyboard
- Adapter to connect external keyboard to keypad port

**Option Card Power Limitations**

There is a limit on the amount of current that can be drawn by installed option cards. The total current consumption of the two option card slots must not exceed the maximum current for each voltage shown below.

Voltage	+5V	-5V	+12V	-12V
Maximum current	4A	0.3A	0.6A	0.3A

Refer to the option card handbook for details.

### Switch Settings

There are no jumpers to set for the Epson NB3s. All settings are controlled by the SETUP program.

The NB3s has one set of DIP switches, which is used in conjunction with a switch in the rear option slot of the optional Expansion Unit when you install an external video card into the Expansion Unit (Unless you install an external video card into the Expansion Unit, you do not need to use any of these switches.)

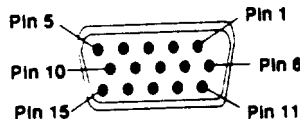
The DIP switches in the NB3s are located in the RAM card/coprocessor slot, above the keyboard on the computer. These DIP switches have the functions shown below:

Switch	Position	Function
1	OFF	Color video card
	ON	Monochrome video card
2	OFF/ON	Not used



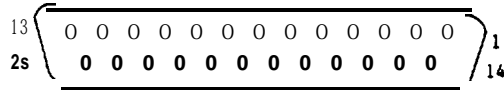
### Connector Pin Assignments

#### VGA Video Connector



Pin No.	Signal Name	Direction
1	RED	⓪
2	GREEN	0
3	BLUE	0
4	NC	
5	GND	PWR
6	GND	PWR
7	GND	PWR
8	GND	PWR
9	NC	
10	GND	PWR
11	MONSC	
12	MONS1	
13	VSYNC	0
14	HSYNC	0
15	NC	

#### Printer/FDD Connector



#### Pin Assignments for the Parallel Port

Pin	Signal	Pin	Signal
1	STROBE	10	ACK'
2	DATA0	11	BUSY
3	DATA1	12	PE
4	DATA2	13	SELECT
5	DATA3	14	AUTO*
6	DATA4	15	ERROR'
7	DATA5	16	INIT*
8	DATA6		
9	DATA7		
		19	SIGNAL GND
		20	SIGNAL GND
		21	SIGNAL GND
		21	SIGNAL GND
		22	SIGNAL GND
		23	SIGNAL GND
		24	SIGNAL GND
		25	SIGNAL GND

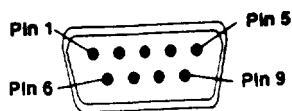
\* Active Low Logic

#### Pin Assignments for the External FDD

Pin No.	Signal Name	I/O	Description
1	-READY	-	N/A
2	-EXINDEX	I	Index Signal
3	-EXTRK0	I	Track00 Signal
4	-EXWPROT	I	Write Protect Signal
5	-EXRDDATA	I	Read Data
6	-EXDSKCHG	I	High Density Select
7	N/A	-	No Connection
8	N/A	-	No Connection
9	N/A	-	No Connection
10	-EXDSEL	O	Drive Select Signal
11	-EXMOTON	O	Motor On Enable
12	-EXWRDATA	O	Write Data
13	-EXWRGATE	O	Write Enable
14	EXHIGH	I	Disk Change
15	-EXHS1	O	Side Select 1
16	-EXDIR	O	Direction
17	-EXSTEP	O	Step Signal
18-25	GND	-	Ground

Note: Signal direction is as viewed from outside of the connector.

### Serial Port Connector



Pin	Signal	Pin	Signal
1	Data Carrier Detect	6	Data Set Ready
2	Receive Data	7	Request To Send
3	Transmit Data	8	Clear To Send
4	Data Terminal Ready	9	Ring Indicator
5	not used		

### I/O Port Addresses

Address	Function
000-01F	DMA Controller 1
020-03F	Interrupt Controller 1, 8259 Master
040-05F	Timer/Counter, 8254
060-06F	Keyboard controller, 8042
070-07F	RTC and Non-Maskable Interrupt Mask
080-09F	DMA Page Register
0A0-0BF	Interrupt Controller 2 8259 Slave
0C0-0DF	DMA Controller 2
0F0	Clear Coprocessor Busy
0F1	Reset Coprocessor
0F8-0FF	Coprocessor
120-121	System Control Port
170-178	Hard Disk Controller Secondary
1BF	Configuration Register Lock Port 1
1F0-1F8	Hard Disk Controller Primary
200-207	Game I/O
278-27A	Parallel Printer Port 2
27B	Configuration Register Lock Port 2
27C-27F	parallel Printer port 2
2F8-2FF	Serial Port 2
300-31F	Prototype Card
360-36F	Reserved
370-377	Diskette Controller Secondary
378-37A	Parallel port 1
37B	Configuration Register bolt Poll 3
37C-37F	parallel port 1
380-38F	SDLC, Bisynchronous 2
3A0-3AF	Bisynchronous 1
3B0-3BB	VGA Monitor Adapter
3BC-3BE	Parallel Printer Alternate Port •
3BF-3DF	VGA Monitor Adapter
3F0-3F7	Diskette Controller primary
3F8-3FF	Serial Port 1

### Hardware Interrupts

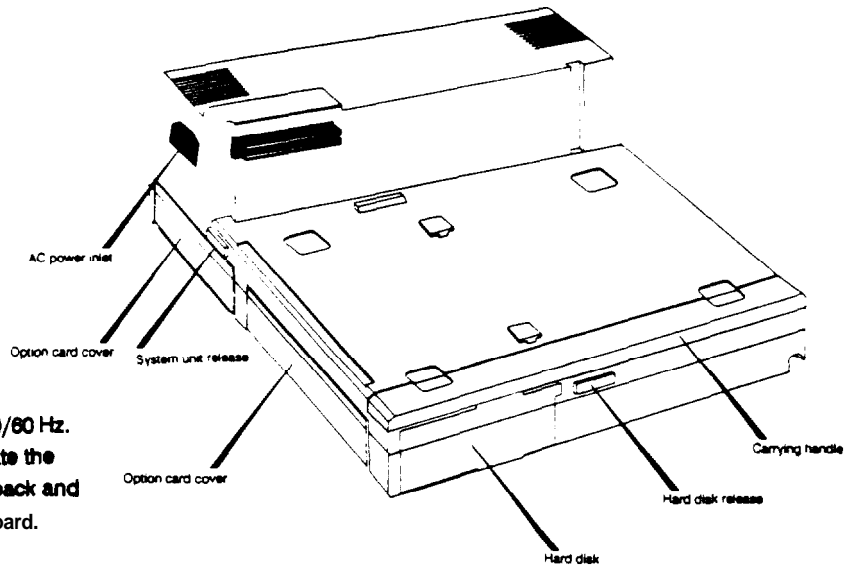
CTLR1	CTLR2	Function
IRQ0		Timer Output 0
IRQ1		Keyboard
IRQ2		Interrupt from CTLR2
IRQ3		Serial port 2
IRQ4		Serial port 1
IRQ5		Parallel port 2
IRQ6		Floppy disk interrupt
IRQ7		Parallel port 1
	IRQ8	RTC interrupt
	IRQ9	Software redirected to IRQ2
	IRQ10	Reserved
	IRQ11	Reserved
	IRQ12	Reserved
	IRQ13	Coprocessor
	IRQ14	Hard disk controller
	IRQ15	Reserved

• If this port is alive, BIOS will give it priority.

### DMA Channels

Channel	Function
0	Spare
1	Spare
2	Floppy disk transfers
3	Spare (Hard disk drive)
4	Cascade of data from channel 0-3
5	Spare
6	Spare
7	Spare

**NB3s Expansion Unit  
(Optional)**



**Power Supply** Automatic 100-240 V sensing, 50/60 Hz. Supplies enough power to operate the computer, recharge the battery pack and power an optional full-size keyboard.

**Hard Disk** Interchangeable, slide-out, 120MB hard disk; 19 ms average access time; built-in controller.

**Option Slots** Two standard I/O expansion slots, 8/16-bit ISA-compatible.

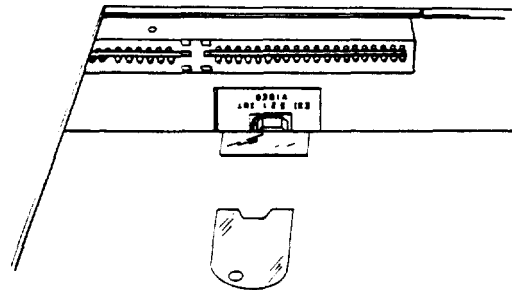
Front Slot (max. size)	Width	0.66" (17 mm)
	Height	4.80" (122 mm)
	Length (normal)	10.63" (270 mm)
	(w/cover)	13.30" (340 mm)
	(w/HDD)	6.12" (155 mm)
Rear Slot (max. size)	Width	0.66" (17 mm)
	Height	4.13" (106 mm)
	Length (normal)	10.63" (270 mm)
	(w/cover)	13.30" (340 mm)

**Dimensions** (W x D x H) mm  
297 x 284 x 43 (front); 92.8 (rear)

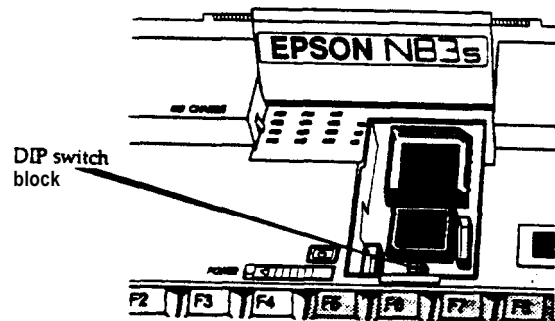
**Weight** Approximately 3.75 lbs., 1.7 kg

**Video Controller Switch**

If you wish to install a video card in the NB3s Expansion Unit, you must disable the onboard video controller. To do this, set the video switch to the EXT position. The video switch is located beneath the connector in the expansion unit's rear option slot.



In addition, you must check the position of the DIP switch located in the slot for the optional coprocessor and RAM card. Remove the RAM card, if installed. The DIP switch is immediately below the BIOS chip. If you are installing a color video card, be sure that DIP switch 1 is OFF. If you are installing a monochrome video card, be sure that DIP switch 1 is ON.



**Information Reference List**

**Engineering Change Notice**

None

**Product Support Bulletin**

None.

**Related Documentation**

MS DOS 4.01		
Y18699100200		<b>Reference Manual</b>
Y18699100400		<b>Installation Guide</b>
Y18699100500		<b>Shell User's Guide</b>
Y18699100300		<b>Command Summary</b>
Y72299100700		<b>NB3s User's Guide</b>
TM-NB3s		<b>NB3s Service Manual</b>
PL-NB3s		<b>Epson NB3s Parts List</b>
Y722991007		<b>NB3s User's Manual</b>